#3   OIPE

```
RAW SEQUENCE LISTING                    DATE: 02/14/2002
PATENT APPLICATION:  US/10/025,648      TIME: 19:31:56

Input Set : N:\Crf3\RULE60\10025648.txt
Output Set: N:\CRF3\02142002\J025648.raw

SEQUENCE LISTING
  4 (1) GENERAL INFORMATION:
  6      (i) APPLICANT: Bisgard-Frantzen, Henrik
  7                     Svendsen, Allan
  8                     Borchert, Torben Vedel
 10     (ii) TITLE OF INVENTION: AMYLASE VARIANTS
 12    (iii) NUMBER OF SEQUENCES: 32
 14     (iv) CORRESPONDENCE ADDRESS:
 15          (A) ADDRESSEE: Novo Nordisk of North America, Inc.
 16          (B) STREET: 405 Lexington Avenue, Suite 6400
 17          (C) CITY: New York
 18          (D) STATE: New York
 19          (E) COUNTRY: U.S.A.
 20          (F) ZIP: 10174-6401
 22      (v) COMPUTER READABLE FORM:
 23          (A) MEDIUM TYPE: Floppy disk
 24          (B) COMPUTER: IBM PC compatible
 25          (C) OPERATING SYSTEM: PC-DOS/MS-DOS
 26          (D) SOFTWARE: PatentIn Release #1.0, Version #1.25 (EPO)
 28     (vi) CURRENT APPLICATION DATA:
C--> 29          (A) APPLICATION NUMBER: US/10/025,648
C--> 30          (B) FILING DATE: 19-Dec-2001
 36          (C) CLASSIFICATION:
 33    (vii) PRIOR APPLICATION DATA:
 34          (A) APPLICATION NUMBER: 08/600,656
 35          (B) FILING DATE: 13-FEB-1996
 38   (viii) ATTORNEY/AGENT INFORMATION:
 39          (A) NAME: Lambiris, Elias J.
 40          (B) REGISTRATION NUMBER: 33,728
 41          (C) REFERENCE/DOCKET NUMBER: 4318.204-US
 43     (ix) TELECOMMUNICATION INFORMATION:
 44          (A) TELEPHONE: 212 867 0123
 45          (B) TELEFAX: 212 867 0298
 48 (2) INFORMATION FOR SEQ ID NO: 1:
 50      (i) SEQUENCE CHARACTERISTICS:
 51          (A) LENGTH: 485 amino acids
 52          (B) TYPE: amino acid
 53          (C) STRANDEDNESS: single
 54          (D) TOPOLOGY: linear
 56     (ii) MOLECULE TYPE: peptide
 58     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
 60          His His Asn Gly Thr Asn Gly Thr Met Met Gln Tyr Phe Glu Trp Tyr
 61          1               5                   10                  15
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ENTERED

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 63    Leu Pro Asn Asp Gly Asn His Trp Asn Arg Leu Arg Asp Asp Ala Ala
 64                20              25              30
 66    Asn Leu Lys Ser Lys Gly Ile Thr Ala Val Trp Ile Pro Pro Ala Trp
 67                35              40              45
 69    Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
 70           50              55              60
 72    Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
 73    65              70              75                  80
 75    Thr Arg Asn Gln Leu Gln Ala Ala Val Thr Ser Leu Lys Asn Asn Gly
 76                85                  90                  95
 78    Ile Gln Val Tyr Gly Asp Val Val Met Asn His Lys Gly Gly Ala Asp
 79                100             105                 110
 81    Gly Thr Glu Ile Val Asn Ala Val Glu Val Asn Arg Ser Asn Arg Asn
 82                115             120                 125
 84    Gln Glu Thr Ser Gly Glu Tyr Ala Ile Glu Ala Trp Thr Lys Phe Asp
 85           130             135                 140
 87    Phe Pro Gly Arg Gly Asn Asn His Ser Ser Phe Lys Trp Arg Trp Tyr
 88    145             150                 155                 160
 90    His Phe Asp Gly Thr Asp Trp Asp Gln Ser Arg Gln Leu Gln Asn Lys
 91                165             170                 175
 93    Ile Tyr Lys Phe Arg Gly Thr Gly Lys Ala Trp Asp Trp Glu Val Asp
 94                180             185                 190
 96    Thr Glu Asn Gly Asn Tyr Asp Tyr Leu Met Tyr Ala Asp Val Asp Met
 97                195             200                 205
 99    Asp His Pro Glu Val Ile His Glu Leu Arg Asn Trp Gly Val Trp Tyr
100           210             215                 220
102    Thr Asn Thr Leu Asn Leu Asp Gly Phe Arg Ile Asp Ala Val Lys His
103    225             230                 235                 240
105    Ile Lys Tyr Ser Phe Thr Arg Asp Trp Leu Thr His Val Arg Asn Thr
106                245                 250                 255
108    Thr Gly Lys Pro Met Phe Ala Val Ala Glu Phe Trp Lys Asn Asp Leu
109                260                 265                 270
111    Gly Ala Ile Glu Asn Tyr Leu Asn Lys Thr Ser Trp Asn His Ser Val
112                275                 280                 285
114    Phe Asp Val Pro Leu His Tyr Asn Leu Tyr Asn Ala Ser Asn Ser Gly
115           290             295                 300
117    Gly Tyr Tyr Asp Met Arg Asn Ile Leu Asn Gly Ser Val Val Gln Lys
118    305             310                 315                 320
120    His Pro Thr His Ala Val Thr Phe Val Asp Asn His Asp Ser Gln Pro
121                325             330                 335
123    Gly Glu Ala Leu Glu Ser Phe Val Gln Gln Trp Phe Lys Pro Leu Ala
124                340             345                 350
126    Tyr Ala Leu Val Leu Thr Arg Glu Gln Gly Tyr Pro Ser Val Phe Tyr
127           355             360                 365
129    Gly Asp Tyr Tyr Gly Ile Pro Thr His Gly Val Pro Ala Met Lys Ser
130           370             375                 380
132    Lys Ile Asp Pro Leu Leu Gln Ala Arg Gln Thr Phe Ala Tyr Gly Thr
133    385             390                 395                 400
135    Gln His Asp Tyr Phe Asp His His Asp Ile Ile Gly Trp Thr Arg Glu
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                    RAW SEQUENCE LISTING             DATE: 02/14/2002
                    PATENT APPLICATION:  US/10/025,648   TIME: 19:31:57

                    Input Set : N:\Crf3\RULE60\10025648.txt
                    Output Set: N:\CRF3\02142002\J025648.raw
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136                         405              410              415
138     Gly Asn Ser Ser His Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asp
139                   420              425              430
141     Gly Pro Gly Gly Asn Lys Trp Met Tyr Val Gly Lys Asn Lys Ala Gly
142               435              440              445
144     Gln Val Trp Arg Asp Ile Thr Gly Asn Arg Thr Gly Thr Val Thr Ile
145           450              455              460
147     Asn Ala Asp Gly Trp Gly Asn Phe Ser Val Asn Gly Gly Ser Val Ser
148     465              470              475              480
150     Val Trp Val Lys Gln
151                   485
154 (2) INFORMATION FOR SEQ ID NO: 2:
156     (i) SEQUENCE CHARACTERISTICS:
157         (A) LENGTH: 485 amino acids
158         (B) TYPE: amino acid
159         (C) STRANDEDNESS: single
160         (D) TOPOLOGY: linear
162     (ii) MOLECULE TYPE: peptide
164     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
166     His His Asn Gly Thr Asn Gly Thr Met Met Gln Tyr Phe Glu Trp His
167     1               5               10              15
169     Leu Pro Asn Asp Gly Asn His Trp Asn Arg Leu Arg Asp Asp Ala Ser
170                   20              25              30
172     Asn Leu Arg Asn Arg Gly Ile Thr Ala Ile Trp Ile Pro Pro Ala Trp
173               35              40              45
175     Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
176           50              55              60
178     Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
179     65              70              75              80
181     Thr Arg Ser Gln Leu Glu Ser Ala Ile His Ala Leu Lys Asn Asn Gly
182               85              90              95
184     Val Gln Val Tyr Gly Asp Val Val Met Asn His Lys Gly Gly Ala Asp
185               100             105             110
187     Ala Thr Glu Asn Val Leu Ala Val Glu Val Asn Pro Asn Asn Arg Asn
188               115             120             125
190     Gln Glu Ile Ser Gly Asp Tyr Thr Ile Glu Ala Trp Thr Lys Phe Asp
191               130             135             140
193     Phe Pro Gly Arg Gly Asn Thr Tyr Ser Asp Phe Lys Trp Arg Trp Tyr
194     145             150             155             160
196     His Phe Asp Gly Val Asp Trp Asp Gln Ser Arg Gln Phe Gln Asn Arg
197               165             170             175
199     Ile Tyr Lys Phe Arg Gly Asp Gly Lys Ala Trp Asp Trp Glu Val Asp
200               180             185             190
202     Ser Glu Asn Gly Asn Tyr Asp Tyr Leu Met Tyr Ala Asp Val Asp Met
203               195             200             205
205     Asp His Pro Glu Val Val Asn Glu Leu Arg Arg Trp Gly Glu Trp Tyr
206               210             215             220
208     Thr Asn Thr Leu Asn Leu Asp Gly Phe Arg Ile Asp Ala Val Lys His
209     225             230             235             240
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RAW SEQUENCE LISTING   DATE: 02/14/2002
PATENT APPLICATION: US/10/025,648   TIME: 19:31:57

Input Set : N:\Crf3\RULE60\10025648.txt
Output Set: N:\CRF3\02142002\J025648.raw

```
211      Ile Lys Tyr Ser Phe Thr Arg Asp Trp Leu Thr His Val Arg Asn Ala
212                      245             250                 255
214      Thr Gly Lys Glu Met Phe Ala Val Ala Glu Phe Trp Lys Asn Asp Leu
215                      260             265                 270
217      Gly Ala Leu Glu Asn Tyr Leu Asn Lys Thr Asn Trp Asn His Ser Val
218               275             280                 285
220      Phe Asp Val Pro Leu His Tyr Asn Leu Tyr Asn Ala Ser Asn Ser Gly
221          290             295                 300
223      Gly Asn Tyr Asp Met Ala Lys Leu Leu Asn Gly Thr Val Val Gln Lys
224      305             310                 315                 320
226      His Pro Met His Ala Val Thr Phe Val Asp Asn His Asp Ser Gln Pro
227                      325             330                 335
229      Gly Glu Ser Leu Glu Ser Phe Val Gln Glu Trp Phe Lys Pro Leu Ala
230                      340             345                 350
232      Tyr Ala Leu Ile Leu Thr Arg Glu Gln Gly Tyr Pro Ser Val Phe Tyr
233               355             360                 365
235      Gly Asp Tyr Tyr Gly Ile Pro Thr His Ser Val Pro Ala Met Lys Ala
236          370             375                 380
238      Lys Ile Asp Pro Ile Leu Glu Ala Arg Gln Asn Phe Ala Tyr Gly Thr
239      385             390                 395                 400
241      Gln His Asp Tyr Phe Asp His His Asn Ile Ile Gly Trp Thr Arg Glu
242                      405             410                 415
244      Gly Asn Thr Thr His Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asp
245               420             425                 430
247      Gly Pro Gly Gly Glu Lys Trp Met Tyr Val Gly Gln Asn Lys Ala Gly
248          435             440                 445
250      Gln Val Trp His Asp Ile Thr Gly Asn Lys Pro Gly Thr Val Thr Ile
251          450             455                 460
253      Asn Ala Asp Gly Trp Ala Asn Phe Ser Val Asn Gly Gly Ser Val Ser
254      465             470                 475                 480
256      Ile Trp Val Lys Arg
257                      485
260  (2)  INFORMATION FOR SEQ ID NO: 3:
262       (i)  SEQUENCE CHARACTERISTICS:
263            (A)  LENGTH: 514 amino acids
264            (B)  TYPE: amino acid
265            (C)  STRANDEDNESS: single
266            (D)  TOPOLOGY: linear
268      (ii)  MOLECULE TYPE: peptide
270      (xi)  SEQUENCE DESCRIPTION: SEQ ID NO: 3:
272      Ala Ala Pro Phe Asn Gly Thr Met Met Gln Tyr Phe Glu Trp Tyr Leu
273      1               5               10                  15
275      Pro Asp Asp Gly Thr Leu Trp Thr Lys Val Ala Asn Glu Ala Asn Asn
276                      20              25                  30
278      Leu Ser Ser Leu Gly Ile Thr Ala Leu Trp Leu Pro Pro Ala Tyr Lys
279               35              40                  45
281      Gly Thr Ser Arg Ser Asp Val Gly Tyr Gly Val Tyr Asp Leu Tyr Asp
282          50              55                  60
284      Leu Gly Glu Phe Asn Gln Lys Gly Ala Val Arg Thr Lys Tyr Gly Thr
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RAW SEQUENCE LISTING   DATE: 02/14/2002
PATENT APPLICATION: US/10/025,648 TIME: 19:31:57

Input Set : N:\Crf3\RULE60\10025648.txt
Output Set: N:\CRF3\02142002\J025648.raw

285	65				70					75				80
287	Lys	Ala	Gln	Tyr	Leu	Gln	Ala	Ile	Gln	Ala	Ala	His	Ala	Ala	Gly	Met
288					85					90				95
290	Gln	Val	Tyr	Ala	Asp	Val	Val	Phe	Asp	His	Lys	Gly	Gly	Ala	Asp	Gly
291				100					105				110
293	Thr	Glu	Trp	Val	Asp	Ala	Val	Glu	Val	Asn	Pro	Ser	Asp	Arg	Asn	Gln
294			115					120				125
296	Glu	Ile	Ser	Gly	Thr	Tyr	Gln	Ile	Gln	Ala	Trp	Thr	Lys	Phe	Asp	Phe
297			130					135				140
299	Pro	Gly	Arg	Gly	Asn	Thr	Tyr	Ser	Ser	Phe	Lys	Trp	Arg	Trp	Tyr	His
300		145					150				155				160
302	Phe	Asp	Gly	Val	Asp	Trp	Asp	Glu	Ser	Arg	Lys	Leu	Ser	Arg	Ile	Tyr
303				165					170				175
305	Lys	Phe	Arg	Gly	Ile	Gly	Lys	Ala	Trp	Asp	Trp	Glu	Val	Asp	Thr	Glu
306			180					185				190
308	Asn	Gly	Asn	Tyr	Asp	Tyr	Leu	Met	Tyr	Ala	Asp	Leu	Asp	Met	Asp	His
309			195					200				205
311	Pro	Glu	Val	Val	Thr	Glu	Leu	Lys	Ser	Trp	Gly	Lys	Trp	Tyr	Val	Asn
312		210					215				220
314	Thr	Thr	Asn	Ile	Asp	Gly	Phe	Arg	Leu	Asp	Ala	Val	Lys	His	Ile	Lys
315	225				230				235				240
317	Phe	Ser	Phe	Phe	Pro	Asp	Trp	Leu	Ser	Asp	Val	Arg	Ser	Gln	Thr	Gly
318				245				250				255
320	Lys	Pro	Leu	Phe	Thr	Val	Gly	Glu	Tyr	Trp	Ser	Tyr	Asp	Ile	Asn	Lys
321			260				265				270
323	Leu	His	Asn	Tyr	Ile	Met	Lys	Thr	Asn	Gly	Thr	Met	Ser	Leu	Phe	Asp
324		275				280				285
326	Ala	Pro	Leu	His	Asn	Lys	Phe	Tyr	Thr	Ala	Ser	Lys	Ser	Gly	Gly	Thr
327		290				295				300
329	Phe	Asp	Met	Arg	Thr	Leu	Met	Thr	Asn	Thr	Leu	Met	Lys	Asp	Gln	Pro
330	305				310				315				320
332	Thr	Leu	Ala	Val	Thr	Phe	Val	Asp	Asn	His	Asp	Thr	Glu	Pro	Gly	Gln
333				325				330				335
335	Ala	Leu	Gln	Ser	Trp	Val	Asp	Pro	Trp	Phe	Lys	Pro	Leu	Ala	Tyr	Ala
336			340				345				350
338	Phe	Ile	Leu	Thr	Arg	Gln	Glu	Gly	Tyr	Pro	Cys	Val	Phe	Tyr	Gly	Asp
339		355				360				365
341	Tyr	Tyr	Gly	Ile	Pro	Gln	Tyr	Asn	Ile	Pro	Ser	Leu	Lys	Ser	Lys	Ile
342		370				375				380
344	Asp	Pro	Leu	Leu	Ile	Ala	Arg	Arg	Asp	Tyr	Ala	Tyr	Gly	Thr	Gln	His
345	385				390				395				400
347	Asp	Tyr	Leu	Asp	His	Ser	Asp	Ile	Ile	Gly	Trp	Thr	Arg	Glu	Gly	Val
348				405				410				415
350	Thr	Glu	Lys	Pro	Gly	Ser	Gly	Leu	Ala	Ala	Leu	Ile	Thr	Asp	Gly	Pro
351			420				425				430
353	Gly	Gly	Ser	Lys	Trp	Met	Tyr	Val	Gly	Lys	Gln	His	Ala	Gly	Lys	Val
354			435				440				445
356	Phe	Tyr	Asp	Leu	Thr	Gly	Asn	Arg	Ser	Asp	Thr	Val	Thr	Ile	Asn	Ser
357		450				455				460

VERIFICATION SUMMARY
PATENT APPLICATION: US/10/025,648

DATE: 02/14/2002
TIME: 19:31:58

Input Set : N:\Crf3\RULE60\10025648.txt
Output Set: N:\CRF3\02142002\J025648.raw

L:29 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]
L:30 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]